IEC PAS 61980-4

Edition 1.0 2025-11

PUBLICLY AVAILABLE SPECIFICATION

Electric vehicle wireless power transfer (WPT) systems -
Part 4: Interoperability and safety of high-power wireless power transfer (H-WPT) for electric vehicles

ICS 43.120

ISBN 978-2-8327-0851-4

IEC PAS 61980-4:2025-11(en)

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Electric vehicle wireless power transfer (WPT) systems - Part 4: Interoperability and safety of high-power wireless power transfer (H-WPT) for electric vehicles

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IEC PAS 61980-4 has been prepared by IEC technical committee 69: Electrical power/energy transfer systems for electrically propelled road vehicles and industrial trucks. It is a Publicly Available Specification.

The text of this Publicly Available Specification is based on the following documents:

Draft	Report on voting
69/1068/DPAS	69/1107/RVDPAS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Publicly Available Specification is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 61980 series, published under the general title *Electric vehicle wireless power transfer (WPT) systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

NOTE In accordance with ISO/IEC Directives, Part 1, IEC PASs are automatically withdrawn after 4 years.

INTRODUCTION

The IEC 61980 series is published in separate parts according to the following structure:

– IEC 61980-1 covers general requirements for electric road vehicle (EV) wireless power transfer (WPT) systems including general background and definitions (e.g. efficiency, electrical safety, EMC, EMF);

– IEC 61980-2 applies to magnetic field wireless power transfer (MF-WPT) for electric road vehicles and covers specific requirements for system activities and communication between the electric road vehicle side and the off-board side, including general background and definitions;

– IEC 61980-3 covers specific power transfer requirements for the off-board side of magnetic field wireless power transfer systems for electric road vehicles (e.g. efficiency, electrical safety, EMC, EMF);

– IEC PAS 61980-4 covers specific power transfer requirements for the off-board side of magnetic field high power wireless power transfer (H-WPT) systems for electric road vehicles (e.g. efficiency, electrical safety, EMC, EMF).

– IEC PAS 61980-5 covers specific power transfer requirements for the off-board side of magnetic field dynamic wireless power transfer (MF-D-WPT) systems for electric road vehicles (e.g. efficiency, electrical safety, EMC, EMF).

– IEC PAS 61980-6 applies to magnetic field dynamic wireless power transfer for electric road vehicles and covers specific requirements for system activities and communication between the electric road vehicle side and the off-board side, including general background and definitions.

1 Scope

This part of IEC 61980 applies to the off-board supply equipment for high-power wireless power transfer (H-WPT) via magnetic field (MF-WPT) to electric road vehicles for purposes of supplying electric energy to the RESS (rechargeable energy storage system) or other on-board electrical systems, or both.

The MF-WPT system operates at standard supply voltage ratings per IEC 60038 up to 1 000 V AC and up to 1 500 V DC from the supply network. The power transfer takes place while the electric vehicle (EV) is stationary.

The aspects covered in this document include

– the characteristics and operating conditions,
– specific power transfer requirements for the off-board side of magnetic field high-power wireless power transfer systems for electric road vehicles,
– the required level of electrical safety,
– requirements for basic communication for safety and process matters if required by a MF WPT system,
– requirements for positioning to assure efficient and safe MF-WPT power transfer, and
– specific EMC requirements for MF-WPT systems

This document does not apply to

– safety aspects related to maintenance, and
– trolley buses, rail vehicles and vehicles designed primarily for use off-road

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60038, *IEC standard voltages*

IEC 61980-1:2020, *Electric vehicle wireless power transfer (WPT) systems - Part 1: General requirements*

IEC 61980-2:2023, *Electric vehicle wireless power transfer (WPT) systems - Part 2: Specific requirements for MF-WPT system communication and activities*

IEC 61980-3:2022, *Electric vehicle wireless power transfer (WPT) systems - Part 3: Specific requirements for magnetic field wireless power transfer systems*

ITU-R Recommendation SM.2110-1, *Guidance on frequency ranges for operation of non-beam wireless power transmission for electric vehicles*